

Interpretation of Results

There are four possible outcomes from a test as shown in Table 6:

1. true positive (the drug is present);
2. true negative (drug is not present);
3. false positive (drug detected but drug not present); and
4. false negative (drug not detected but drug is present).

Table 6: Outcomes from Drug Test

Test results	Drug Use	
	Yes	No
Positive	1. True positive	3. False positive
Negative	4. False negative	2. True negative

Source: Bigger 1979, p. 30.

What Does a Positive Test Result Indicate?

A positive drug test indicates that the specific drug is present in the urine at the designated cutoff level. To minimise the possibility of a person testing false positive, the cutoff concentration is set to the lowest concentration of the drug that can be reliably detected, usually at the 95 per cent confidence level (Jenny 1989, p. 17). It is important to understand that “owing to analytical variability, determination of the status of drug presence or absence is not absolute” (Jenny 1989, p. 17).

A positive test cannot determine the dosage, when the drug was administered, how it was administered, or the degree of impairment (Council on Scientific Affairs 1987, Jenny 1989, McBay 1989, Wilkins 1998). The presence of a drug only means the person has ingested the drug (and in

the case of cannabis this may be passive ingestion¹⁰). Although the test results from screening and confirmatory procedures present a “number” or concentration value, this number cannot be equated to levels of intoxication or performance (McBay 1989). McBay (1989, pp. 290–291) notes “Except for alcohol there is a lack of data in the literature on blood concentration and on drugs in urine upon which an expert may base an opinion of drug-related impairment or improvement ... Even if a drug or metabolite in urine is positively identified and precisely quantified, there is no scientific basis for forming opinions as to when, how often, and how much drug was used or as to the past, present, or future effect of the drug on the performance, health or safety of the worker”.

False Positive

It is possible for a legal substance to interact with a substance in a urine specimen resulting in a positive drug test (referred to as a “false positive”) even though an illicit drug was not in fact used. Such reactions have reportedly, although infrequently, occurred from antihistamines, ibuprofen and other anti-inflammatory drugs, and poppy seeds. It is also the case that a positive screen can result from the use of prescription medications. Appropriate confirmation procedures should guard against false positive results. Visher and McFadden (1991) found an average false positive rate (across opiates, cocaine, marijuana, phencyclidine PCP, and amphetamines) of 1 to 2 per cent. False positive screens for cocaine are rare due to the uniqueness of the cocaine metabolite molecule detected by the test (Stephens and Feucht 1993). As a result, a confirmation test is not conducted for cocaine. Whereas the confirmatory test for a positive amphetamine screen will enable a more accurate determination of whether the positive result is for the illegal substance, methylamphetamine. Australian research has shown that methylamphetamine isomers cannot be produced by using legally available amphetamines (for example, dexamphetamine) or any other legally available drug (Shearer et al. 1999). However, the urine test cannot distinguish between licit or illicit use of pharmaceutical amphetamine.

A positive test raises many questions that the test alone cannot answer.

A positive result, in a sense, is the beginning of the story rather than the end.

¹⁰ However, Hawks and Chiang (1986, p. 86) suggest that the cutoffs are high enough to make such a possibility highly improbable.

Manno (1986, p. 55) suggests that some of the questions that it raises include:

- Is the person using the drug chronically?
- Are they using the drug intermittently?
- Are they addicted to the drug?
- Were they taking the drug under prescription?
- Were they under the influence of the drug at the time the urine was collected?

The only method available to answer many of the questions is to ask the individual concerned. In the DUMA project, detainees are also asked a series of self-report questions on their drug use and criminal behaviour.

What Does a Negative Test Result Indicate?

In the vast majority of cases, a negative test result indicates that there is no presence of the drug or its metabolites in the urine at that time. However, it does not mean that the person has never used the substance at some point just before being arrested. In particular, cocaine has a short half-life and even its metabolites may only be present in the urine for 24–36 hours after use (see Table 4). A number of factors can affect the amount of drug present in the urine at the time the sample was taken. These include the characteristics of the drug, the amount ingested, and the form in which it is ingested physical and pharmacological characteristics of the user; and pathological factors such as genetic disorders, body water, and menstruation (Bigger 1979, p. 30, Chiang and Hawks 1986). It is possible that the person uses drugs intermittently or has recently ceased their use.

False Negative

A negative result does not guarantee that the individual did not consume the drugs prior to being tested. As DUMA uses AS4308–1995 cutoffs, it is possible for a specified amount of the drug(s) to be present and still be reported as “negative”. The level of the drug may not have been high enough to exceed the test’s cutoff level. When this happens, it is referred to as a “false negative”. However, most drugs can usually be detected in urine for up to 2 days after being taken; some up to 4 weeks (see Table 4). The DUMA results are, therefore, a conservative estimate of the extent of illegal drugs used at the time of arrest.